

9E LANDSCAPING GUIDELINES (9/22/17)

9E-1 Setbacks

The SCDOT desires to cooperate as much as possible with organizations desiring to undertake projects to beautify certain sections of various highway rights-of-way. An encroachment permit is required for any landscaping work performed on the highway right-of-way. A sketch plan of the proposed project must be attached to the Encroachment Permit Application. This plan should show the planting arrangement and the type of plants to be used. Photographs may also be helpful.

All encroachment permit applications for landscaping should clearly state the following information:

- A) Speed limits (mph).
- B) Cut or fill slope (Check with local Resident Maintenance Engineer).
- C) Traffic volume – less or greater than 1,500 ADT (Check with local Resident Maintenance Engineer).
- D) Label guardrail; vertical face curb; sidewalks; edge of pavement and right-of-way line on sketch.
- E) State distance plant material is from curb or edge of pavement (offset).

The following guidelines establish a framework for preparing design work for projects of this nature.

- A) Applicants shall furnish, install, and maintain all plantings. They shall be responsible for maintaining all vegetation within the right-of-way that is contiguous with the landscaping. The Department shall not be responsible for providing water, fertilizer, labor, materials, or maintenance within the landscaping limits of the right-of-way.
- B) The Department will exercise care in maintenance, construction, or reconstruction to avoid unnecessary damage. It cannot, however, accept responsibility to protect plants or irrigation systems against damage or theft. If subsequent changes in the highway require removal of plants, this must be done by applicant.
- C) All landscaping work within the SCDOT right-of-way must conform to all local ordinances and all state environmental regulations.
- D) The applicant will perform installation under the supervision of the SCDOT, and shall not block traffic at any time. All traffic control devices will be the responsibility of the applicant and shall conform to section V of the MUTCD. Plantings shall not block billboards, and plantings in the vicinity of billboards will have to be approved on-site by the local District Outdoor Advertising Coordinator prior to the start of planting.
- E) No tree, shrub, etc., shall be permitted in any location where it may interfere with highway safety or traffic visibility or impair standard sight distance in any way. Plants that might prove detrimental to safety, to the highway, or to adjacent property will not be permitted. Otherwise, the selection of plants is left to the discretion of the applicant. Experience has proven that indigenous plant material is more satisfactory. Features such as autumn foliage, flower effects, etc., should be considered. If advice in landscape planning is needed, the Department's Landscape Architect may be contacted through Preconstruction Support. Applicants may want to contact the South Carolina Forestry Commission's Urban Forester for their region for advice.

- F) Minimum offsets for trees and shrubs shall be as described in Table 9-1. This offset would not apply if the location does not leave at least 5 feet of a grassed area suitable for pedestrian traffic along roads without sidewalks. This area is to be seeded or sodded as needed to prevent erosion and provide stable footing for pedestrian traffic. Cross tie planters may be allowed 5 feet from any roadway structure if buried flush with the existing grade.
- G) No trees will be allowed close enough to the road to allow root systems to undermine or damage any roadway structure, such as curbing, sidewalk, or drainage components, at any time during the tree's life. A biological or physical root barrier system may be considered in extenuating circumstances, on a case-by-case basis, as determined by the Department's Landscape Architect.
- H) Trees, shrubs, or earthen mounds shall not block the line of sight along the roadway. This means that no planting shall occur in the area bounded by the sight area formed as shown in Chapter 7 of the ARMS manual. This information shall be determined on a local level by the Resident Maintenance Engineer or his designee.
- I) Landscape lighting on the right-of-way shall be flush with the ground.
- J) If in the future a plant's growth obstructs the view of signs or interferes with the sight distances of approaching traffic, the Department will require the applicant to remove, relocate, or prune the plants to eliminate this obstruction at his expense.
- K) On a case-by-case basis, plantings may be allowed in sight triangle areas, but in these cases the plants must be kept to a maximum height of 2½ feet. Generally, all grass should be removed in these triangles and groundcovers planted.
- L) All trees shall be de-limbed and kept limbless for the first 6 feet in height and up to 7 feet in height where trees are near pedestrian walkways.
- M) Trees shall be selected and placed so that, even when they are fully matured, their limbs shall not overhang into the roadway and block vehicles. The applicant agrees that the trees shall be kept trimmed (not by or at the expense of the SCDOT), if this is required to keep limbs from overhanging into the road.
- N) Crape Myrtles-The department recommends the planting of hybrid-type crape myrtles over the older indica-type. Many, but not all hybrid crape myrtles can be identified by Indian-tribe names. We consider crape myrtles and fringetree to have a smaller than 4-inch diameter at maturity.

There are several trees available for planting on the right-of-way that we know will cause future problems. A complete list of trees not recommended for planting on SCDOT rights-of-way is provided on the SCDOT website. (See Appendix E for details). Some common examples are listed below:

- A) Trees with weak wood. The tree's limbs break during storms. Examples:
 - Silver Maple
 - Bradford Flowering Pear-poor branching during life cycle
 - Mimosa
 - Most pine tree types
- B) Trees with form that is unsuitable for many street tree-planting situations.
 - Live Oak- form of tree (low limbs) may cause problems with vehicular and pedestrian traffic in rural planting situations and is a poor choice in urban street tree situations. The SCDOT usually request a setback distance in excess of minimum setback in this manual.
 - Pin Oak-form of tree (low limbs that hang down at 45 degree angle) may cause problems with vehicular and pedestrian traffic. Also, note that this type of tree is pH sensitive.

- C) Messy trees.
 - Ginkgo trees - Avoid planting the female forms because the fruit is a nuisance.
 - Sweetgum – The fruit is a nuisance and the tree is overplanted; the new fruitless varieties haven't grown well in South Carolina.
 - Tulip Poplar – Trees are huge and weak and leaves are a nuisance.
 - Sycamore – Trees are enormous and overplanted. The leaves, fruit, and bark are messy and a nuisance.
- D) Trees that decline and die after planting.
 - Thornless Honeylocust- Poor choice for South Carolina's climate.
 - Red Maples - Have a problem with the heat in this state; the named varieties are a little better but thought should be given to selection and placement
- E) Some trees are planted where they should not be planted.
 - Cabbage Palmetto - Tree is not suitable for planting throughout state beyond the coast to midlands.
 - In general, evergreen trees, such as Southern Magnolias, tree Hollies, Live Oaks, are not approved in urban street tree situations.
 - Both Dogwoods and Redbuds are poor choices for urban street trees.

9E-2 Irrigation Systems

Irrigation systems for landscaping should be designed so that irrigation can be achieved without any system components encroaching on the right-of-way. When encroachment is unavoidable, details of the irrigation system shall be included in the landscaping plan. In any case, the landscaping plan shall detail provisions for the drainage of water used to irrigate the right-of-way. In no case shall water used to irrigate the right-of-way drain or be sprayed onto the roadway. The correction of any problem involving irrigation water draining or spraying onto the roadway will be the responsibility of the permittee, regardless of the Department's approval of the permit and landscaping plan.

9E-3 Offset of Trees and Shrubs

A tree or shrub that will attain a 4-inch or greater diameter at maturity (measured 4 inches above grade) shall have the edge of its trunk offset from the edge of the roadway a minimum distance as specified in Table 9-1. When a tree or shrub with multiple trunks or a group of small trees close together will have at maturity a combined cross-sectional area equivalent to that of a 4-inch diameter tree, it shall be offset likewise.

Landscaping work may be allowed on the Interstate system on a case-by-case basis. The FHWA's guidance on placement of landscaping features on the Interstates is as follows:

- Brick construction, fountains and ponds: 45 feet from edge of travel way
- Fencing (Breakaway PVC construction): 40 feet from edge of travel way
- Trees (ultimate trunk diameter over 4 inches in diameter): 45' from edge of travel way
- Small plants/shrubs: 30' from edge of travel way

For plantings on ramps, FHWA accepts a 5 feet reduction in the above listed dimensions for trees with an ultimate trunk diameter over 4 inches in diameter.

Table 9-1: Minimum Offset of Trees and Shrubs at Maturity

Roadside Feature	Roadway Design Speed	Offset from Edge of Travelway for Current Volume (ADT) of:	
		≤ 1,500	> 1,500
		ft.	ft.
Non-Interstate Routes			
Guardrail *	All speeds	4	4
Vertical face curb and gutter*	40 mph (60 km/hr) and less	1.5	1.5
	45 and 50 mph (70 and 80 km/h)	6	8
	55 mph (90 km/h)	10	12
6:1 or flatter cut slope ** (Metric 1:6)	40 mph (60 km/hr) and less	10	14
	45 and 50 mph (70 and 80 km/h)	14	18
	55 mph (90 km/h)	16	22
6:1 or flatter fill slope (Metric 1:6)	40 mph (60 km/hr) and less	10	14
	45 and 50 mph (70 and 80 km/h)	14	18
	55 mph (90 km/h)	16	22
4:1 to 5:1 cut slope (Metric 1:4 to 1:5)	40 mph (60 km/hr) and less	10	14
	45 and 50 mph (70 and 80 km/h)	12	18
	55 mph (90 km/h)	14	20
4:1 to 5:1 fill slope (Metric 1:4 to 1:5)	40 mph (60 km/hr) and less	12	16
	45 and 50 mph (70 and 80 km/h)	16	24
	55 mph (90 km/h)	20	26
3:1 cut slope (Metric 1:3)	40 mph (60 km/hr) and less	10	14
	45 and 50 mph (70 and 80 km/h)	10	14
	55 mph (90 km/h)	10	16
3:1 fill slope**** (Metric 1:3)	40 mph (60 km/hr) and less	12	16
	45 and 50 mph (70 and 80 km/h)	16	24
	55 mph (90 km/h)	20	26
Interstate Routes			
Without Guardrail***	All speeds	45 (for trees ≥ 4" caliper at maturity)	
	All Speeds	30 (for trees ≤ 4" caliper at maturity)	
With Guardrail***	All speeds	4	
* Where vertical face curb or guardrail exists, offset is measured from face of curb or guardrail.			
Please note that a vertical face curb and gutter in the median does not allow a 4" or greater diameter tree to be planted			
**Use for all medians with curbing.			
*** Measured from edge of travelway			
**** The 3:1 fill slope is not to be used as part of the offset distance. Proper offset should be achieved by utilizing the distances specified as a total offset measured before and after the 3:1 fill slope. Fixed objects should not be present in the vicinity of the toe of these slopes.			